

Physics & Astronomy Master's One Year After Degree

Results from the Follow-Up Survey of Master's Recipients, Classes of 2009, 2010, & 2011 Combined

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Physics master's degree recipients who exited their departments reported pursuing a diverse set of career and employment outcomes. There was a considerable difference in outcomes depending on whether the degree recipient was a US citizen or not. A significantly larger proportion of the exiting master's who were non-US citizens chose to continue with graduate study than was the case for US citizens.

REPORTS ON PHYSICS MASTER'S

Physics & Astronomy
Master's, One Year After
Degree (September 2014)

Graduate Physics Degrees
(April 2014)

Trends in Exiting Physics
Master's (March 2014)

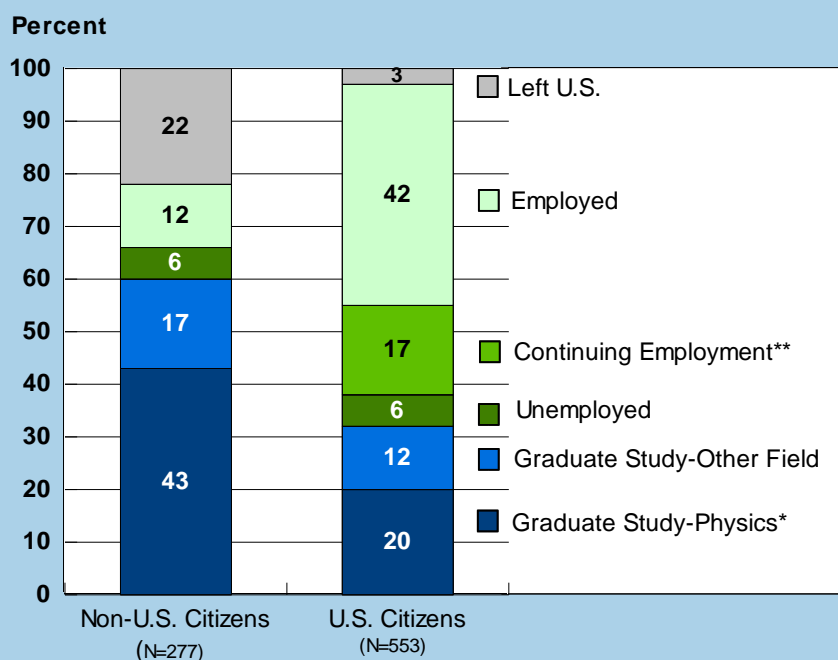
*Initial outcomes for
exiting master's vary
greatly by citizenship.*

THE 2009, 2010, & 2011 FOLLOW-UP SURVEYS OF PHYSICS MASTER'S

Physics master's recipients were contacted in the winter following the academic year in which they received their degrees.

Figure 1

Status of Exiting Physics Master's by Citizenship One Year After Degree, Classes of 2009, 2010, & 2011 Combined.



Exiting master's are individuals who, upon receiving their master's degrees, leave their current physics departments.

*Graduate study-physics: enrolled at a different institution than where master's was obtained.

**Continuing employment: individuals who were employed with the same employer for more than a year prior to earning their master's.

<http://www.aip.org/statistics>

In this report an exiting master's is defined as an individual who received his or her degree from a US physics department and left that department with a master's. Exiting master's can be earned at departments where the master's is the highest degree offered as well as at departments that offer a PhD. Each year there are many students who earn a master's en route and continue working toward a physics or astronomy PhD at the same institution. They are not included in this analysis.

Physics departments in the US averaged 790 exiting physics master's degrees a year in the classes of 2009, 2010, and 2011. In the winter following the academic year in which they received their degree, these new exiting physics master's were asked about their current status. This *focus on* summarizes the findings from those follow-up surveys. Included at the end of this *focus on* is a brief summary of the outcomes of exiting astronomy master's.

As seen in Figure 1, the status of exiting physics master's varies greatly by whether the degree recipient was a US citizen or not. About a fifth of the non-US citizens left the US after receiving their degree. US citizens were more likely than non-US citizens to be in the workforce after receiving their degrees, and a significant proportion were continuing in positions that they held while they were pursuing their master's. About 2 out of every 7 of the employed physics master's who were US citizens were continuing to work in positions that they accepted more than a year before receiving their degree.

The dominant post-degree outcome for non-US exiting physics master's who remained in the US was to continue their graduate studies. The majority of both US and non-US citizens who continued with graduate study were enrolled in a physics program at a different US university. Exiting master's continuing with graduate study in a field other than physics were enrolled in a diverse set of programs, with engineering being the most frequently cited.

There are two military academies that have unique graduate physics programs: Naval Postgraduate School (Monterey, CA) and the Air Force Institute of Technology (Wright-Patterson AFB, OH). These two departments have very specialized master's programs that traditionally award a large number of degrees. They were responsible for conferring 6% of all exiting physics master's degrees in the classes of 2009, 2010, and 2011. The degree recipients from those programs typically stay in one of the branches of the armed services and by the nature of their positions are hard to reach with our follow-up survey. The post-degree outcome data for these individuals are not included in the tables and figures of this report.

The combined exiting master's from the classes of 2009, 2010, and 2011 consisted of 22% women and 34% non-US citizens. The median age was 26.9 with about one-quarter aged 30 and older. Exiting physics master's consist of a diverse set of individuals pursuing many different career paths; as a result the median ages of some of the sub-groups vary considerably. Exiting physics master's continuing with graduate study in the US had a median age of 26.3, where master's accepting new employment had a median age of 26.9. Exiting physics master's who were already established in the workforce when receiving their degree tended to be older, and had the highest median age of 33.3.

For an in-depth look at the demographics and degree production trends of exiting physics master's degrees conferred at US institutions, see the report [Trends in Exiting Physics Master's](#).⁽¹⁾

Table 1

Demographic Profile of Exiting Physics Master's, Classes of 2009, 2010, & 2011 Combined.

Sex	Male	78%
	Female	22%
Citizenship	US	66%
	Non-US	34%
Median Age		26.9

Exiting master's are individuals who, upon receiving their master's degrees, leave their current physics departments.

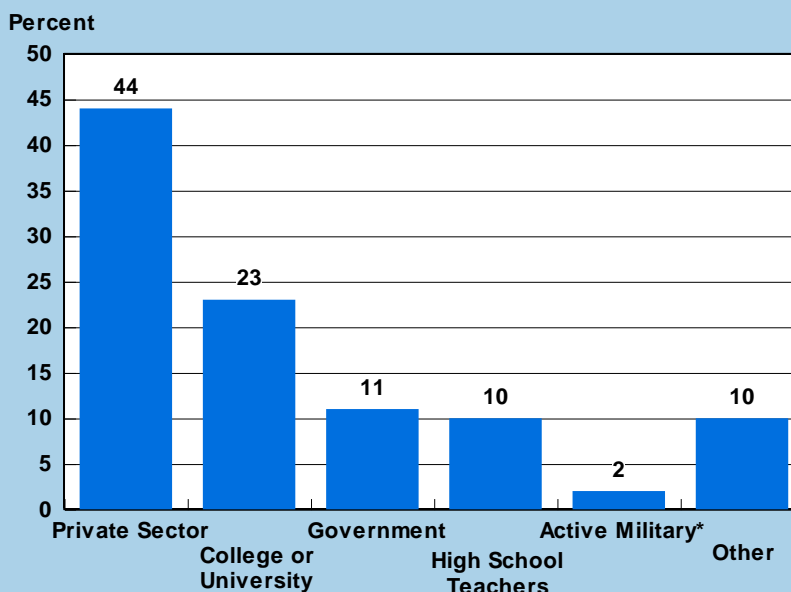
<http://www.aip.org/statistics>

About one-quarter of exiting master's were 30 or more years of age at the time of their degrees.

(1) Mulvey, Patrick and Nicholson, Starr. *focus on Trends in Exiting Physics Master's*. March 2014. AIP, College Park, MD.

Figure 2

Employer Distribution of Exiting Physics Master's One Year After Degree, Classes of 2009, 2010, & 2011 Combined.



About a quarter of employed physics master's were continuing in positions they held prior to receiving their degree.

Exiting master's are individuals who, upon receiving their master's degrees, leave their current physics departments.

Figure includes US employed physics master's, including those who were employed part-time and master's continuing in positions they held while pursuing their degrees. Other includes elementary and middle schools, health care facilities, and non-profit organizations.

*Figure excludes master's receiving their degrees from military academies.

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Exiting master's were employed in all sectors of the economy. The private sector employed the largest proportion (44%) of exiting master's, almost twice as many as the next largest employer, colleges and universities (23%).

About a quarter of the employed exiting master's indicated they were continuing in positions that they held for at least a year prior to receiving their master's. Exiting master's employed as high school teachers were the most likely to continue, with more than half remaining in positions they held while obtaining their master's.

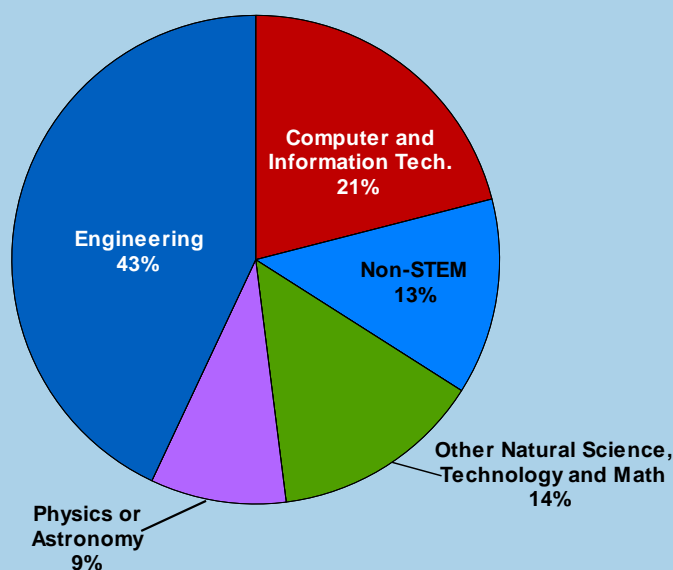
The vast majority of exiting physics master's held full-time positions, with the exception of master's working in colleges and universities, where a little more than a third indicated they held part-time positions (less than 35 hours a week).

Exiting physics master's working in the private sector were employed in a diverse set of fields. The vast majority (87%) held positions that were in a STEM (science, technology, engineering, and math) field. Engineering continues to be the field that employed the largest proportion (43%) of new master's working in the private sector. This was followed by a significant proportion (21%) of master's who were employed in the field of computer and information technology.

A relatively small but not insignificant portion (13%) of master's employed in industry indicated working in a non-STEM field. The fields of employment held by these individuals varied greatly.

Figure 3

Field of Employment of Exiting Physics Master's Working in the Private Sector One Year After Degree, Classes of 2009, 2010, & 2011 Combined.



The vast majority of exiting physics master's employed in the private sector work in STEM fields.

Exiting master's are individuals who, upon receiving their master's degrees, leave their current physics departments.

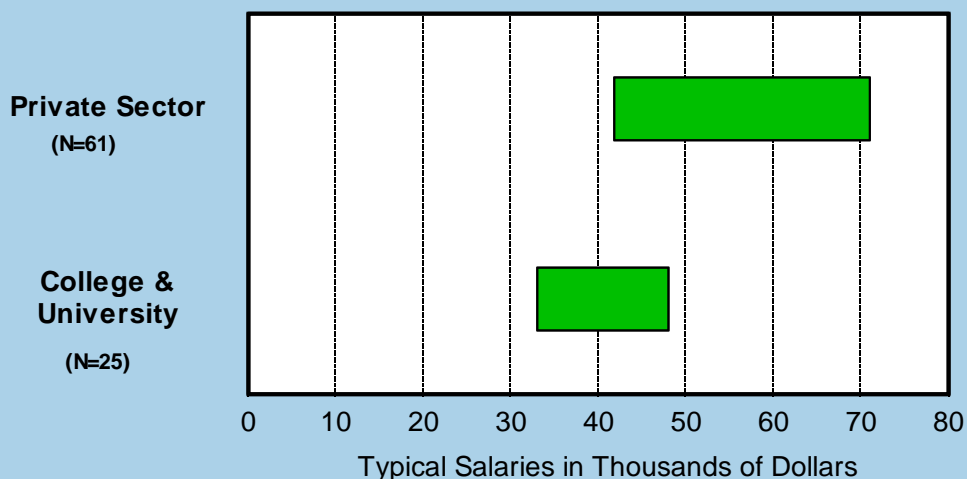
Figure includes US employed physics master's, including those who were employed part-time and master's continuing in positions they held while pursuing their degrees. Figure is based on responses of 158 individuals.

STEM refers to science, technology, engineering and math.

<http://www.aip.org/statistics>

Figure 4

**Typical Starting Salaries of Exiting Physics Master's
One Year After Degree,
Classes 2009, 2010, & 2011 Combined.**



The median starting salary for exiting physics master's working in the private sector was \$60,000.

Exiting master's are individuals who, upon receiving their master's degrees, leave their current physics departments.

The graphic represents the middle 50% of reported salaries, i.e., between the 25th and 75th percentiles. Figure does not include salaries for master's holding part-time positions or salaries for respondents who reported starting their employment more than a year prior to earning their master's degree. The College & University category includes two-year colleges, four-year colleges, universities, and university affiliated research institutes.

<http://www.aip.org/statistics>

The median initial starting salary for exiting physics master's working in the private sector was \$60,000. As a group, exiting physics master's employed at a college or university had a median starting salary of \$38,500. The data presented in Figure 4 does not include the salaries for the master's who were continuing in positions they held for at least a year while working toward their degrees. Twenty-two percent of the exiting master's employed in the private sector were continuing in positions they held while pursuing their degree. The median salary for this group was considerably higher, with a median of \$83,000.

Employment Sector Profiles for Physics Master's

Combined classes of 2009, 2010, & 2011

Private Sector

Exiting physics master's held positions with a wide range of private sector employers, including large hi-tech companies, defense contractors, and a diverse group of smaller companies. Virtually all the positions were full-time. A significant portion, about a fifth, of exiting physics master's remained with employers for whom they worked while pursuing their master's degree. Overwhelmingly, exiting physics master's were employed in STEM occupations, with two-thirds employed in the fields of "engineering" or "computer and information technology". The most frequently cited job activities used by master's in the private sector were teamwork, solving technical problems, using specialized equipment, and programming.

College/University/UARI

As a group, two-year colleges, four-year colleges, universities, and university affiliated research institutes (UARIs) were the second-largest employer of exiting physics master's. About a third reported holding positions that were part-time (less than 35 hours a week). Many of the part-time positions were at two-year colleges. Almost a fifth of the master's working in this employer group indicated they were continuing in positions that they held while obtaining their master's.

The types of positions held varied by specific employer type. Exiting master's employed at two-year colleges were adjunct faculty; many of these positions were part-time. Positions at four-year colleges and universities were primarily research associates, technologists, lecturers, and lab managers. The master's employed at UARIs held a variety of technical positions, including research assistant and engineer.

Civilian Government

Of the exiting physics master's employed in civilian government positions, about a quarter were continuing in positions they held while obtaining their master's degree. Less than half of the civilian government positions were at a government laboratory, with the remainder employed as civilians in one of the branches of the armed services or at other federal agencies, such as the Patent and Trademark Office, Department of Energy, Department of Defense, and NASA. Physics was the most frequently cited field of employment, there were also a significant portion of respondents indicating they were employed in the field of engineering. Job titles were varied but included physicist and patent examiner.

High School

About 60% of exiting physics master's who were employed as high school teachers were continuing in teaching positions that they held while they were pursuing their master's. In many states there is a requirement that high school teachers earn a master's degree in order to maintain their teaching certification. Physics was the primary subject taught by new master's recipients, but math was also part of the teaching load for some of the teachers.

Active Military

Exiting physics master's in the active military come from two sources. The primary source is master's recipients that attended one of two military academies with graduate physics programs: Naval Postgraduate School (Monterrey, CA) and the Air Force Institute of Technology (Wright-Patterson AFB, OH). The other source is typically active military personnel who attend a non-military university to obtain a physics master's degree. Physics master's who are military personnel have specialized degrees and enter into or continue with a variety of highly technical positions within the armed services.

Astronomy Master's: One Year After Degree

The number of students receiving an exiting astronomy master's degree each year is quite small. The classes of 2009, 2010 and 2011 averaged 33 exiting master's a year over the three academic years. A total of 43 departments offered graduate-level astronomy degrees in the academic year 2010-11. Three of these departments offered the master's as their highest astronomy degree, and the remaining 40 were doctoral-granting. For an in-depth look at the demographics and degree production trends of astronomy degrees conferred at US institutions, see the report [Astronomy Enrollments and Degrees](#).⁽²⁾

The follow-up survey collected outcome data on 38 individuals, representing about a third of the exiting astronomy master's from the classes of 2009, 2010, and 2011. Because of the small number of individuals for which we have outcome data, the post degree discussion for exiting astronomy master's will be brief.

Similar to exiting physics master's, the astronomy master's took their careers in a variety of directions. About half of the exiting astronomy master's for whom we had outcome data entered the workforce, and a third continued their graduate studies in a variety of fields, including in astronomy at a different institution. A few individuals left the US after receiving their degrees.

(2) Mulvey, Patrick and Nicholson, Starr. *focus on Astronomy Enrollments and Degrees*. June 2014, AIP, College Park, MD.

Survey Methodology

Each fall, the Statistical Research Center conducts the Survey of Enrollments and Degrees which asks physics and astronomy departments to provide information on the number of students enrolled and the number of recent degree recipients conferred the previous academic year. This survey also asks for the names and contact information of their recent degree recipients. This degree recipient information is used to conduct our master's follow-up survey in the winter following the academic year in which they received their degrees.

Recent master's degree recipients can be very difficult to reach because they tend to move after receiving their degrees and frequently do not keep in contact with their master's-granting departments. To assist us in determining degree recipient outcomes and to help obtain updated contact information, we contact the advisors of non-responding degree recipients.

Because of the relatively small number of individuals receiving physics master's each year and the difficulty in obtaining accurate contact information, we are reporting on three years of survey responses combined. The physics master's classes of 2009, 2010, and 2011 consisted of 838, 794, and 735 degree recipients, respectively, who left their departments. We received post-degree information on 37% of these degree recipients, with most of the information coming directly from the degree recipients.

On the figures in this report the notation "N" represents the number of individuals about whom we received data.

We thank the many physics and astronomy departments, degree recipients, and faculty advisors who made this publication possible.

e-Updates

You can sign up to receive e-mail alerts which notify you when we post a new report. Visit http://www.aip.org/statistics/e_updates.html to register. You can indicate your area(s) of interest; we will send you an e-Update only when we post a new report that includes data of interest to you. If you sign up for every possible notification, you should receive no more than 20 messages in a year.

Career Resources

The American Institute of Physics has a Career Resources page (<http://www.aip.org/career-resources>) that centralizes an array of careers-related information for members of the physical science community. Content includes career advice, the latest science and engineering job opportunities, employment statistics, fellowship information, and science education and career path recommendations. Also featured are links to AIP Member Society Career Resources, which address the needs of specific scientists in greater detail.